## AUTHOR INDEX TO VOLUME 144


Abouaf, R. and C. Benoit, Low-energy electron collisions with dichloromethane and butadiene: selectivity of resonant vibrational excitation 144 (1990) 407
Abramczyk, H., IR $\nu_s$(XH) absorption band shape in H-bonded complex. I. Theory 144 (1990) 305
Abramczyk, H., IR $\nu_s$(XH) absorption band shape of H-bonded complex in condensed media. II. Numerical calculations of the profiles 144 (1990) 319
Ambrose, W.P. and W.E. Moerner, Temperature dependence of photon-gated persistent spectral hole-burning for the meso-tetra-*p*-tolyl-Zn-tetrabenzoporphyrin/chloroform system in poly(methylmethacrylate) 144 (1990) 71
Anisimov, O.A., see S.N. Smirnov 144 (1990) 241

Bacalis, N.C., see P. Valtazanos 144 (1990) 363
Bacskay, G.B., D.I. Kerdraon and N.S. Hush, Quantum chemical study of the HCl molecule and its binary complexes with CO, $C_2H_2$, $C_2H_4$, $PH_3$, $H_2S$, HCN, $H_2O$ and $NH_3$: hydrogen bonding and its effect on the $^{35}Cl$ nuclear quadrupole coupling constant 144 (1990) 53
Bahrdt, J., H. Nahme and N. Schwentner, A metastable state of CO in Ar matrix at about 11 eV 144 (1990) 273
Basilevsky, M.V. and G.E. Chudinov, Application of generalized transition state theory for calculation of the rate constant of a chemical reaction with charge transfer in a polar solvent 144 (1990) 155
Batail, P., see B. Sipp 144 (1990) 299
Bawagan, A.O. and C.E. Brion, A new method for incorporating momentum resolution effects and defining the momentum scale in electron momentum spectroscopy 144 (1990) 167
Benoit, C., see R. Abouaf 144 (1990) 407
Bombach, R., B. Hemmerling and W. Hubschmid, Saturation effects and Stark shift in hydrogen Q-branch CARS spectra 144 (1990) 265
Bonadeo, H., see P. Levy 144 (1990) 377
Brion, C.E., see A.O. Bawagan 144 (1990) 167
Brion, C.E., see G. Cooper 144 (1990) 436
Brumer, P. and M. Shapiro, One photon mode selective control of reactions by rapid or shaped laser pulses: an emperor without clothes? Chem. Phys. 139 (1989) 221. Erratum 144 (1990) 146

Chen, K., G.-P. Wang, C. Kuo and C. Pei, Vibrational analyses of the $^2B_2$–$^2A_1$ fluorescence spectra of $NO_2$ under dye laser excitations 144 (1990) 383
Chudinov, G.E., see M.V. Basilevsky 144 (1990) 155
Clark, S.A.C., T.J. Reddish, C.E. Brion, E.R. Davidson and R.F. Frey, The valence orbital momentum distributions and binding energy spectra of methane by electron momentum spectroscopy: quantitative comparisons using near Hartree–Fock limit and correlated wavefunctions. Chem. Phys. 143 (1990) 1. Erratum 144 (1990) 436
Consalvo, D., see R. Engeln 144 (1990) 81
Cooper, G., T. Ibuki and C.E. Brion, Absolute oscillator strengths for photoabsorption, photoionization and ionic photofragmentation of silane. II. The Si 2p and 2s inner shells. Chem. Phys. 140 (1990) 147. Erratum 144 (1990) 436

Davidson, E.R., see S.A.C. Clark 144 (1990) 436
De Paoli, M.A., see D.A. dos Santos 144 (1990) 103
Dezotti, M.W.G., see D.A. dos Santos 144 (1990) 103
Dmitrieva, I.K., S.K. Pogrebnya and P.I. Porshnev, V–T and V–V rate constants for energy transfer in diatomics. An accurate analytical approximation. Chem. Phys. 142 (1990) 25. Erratum 144 (1990) 304
Dos Santos, D.A., D.S. Galvão, B. Laks, M.W.G. Dezotti and M.A. de Paoli, Poly(*p*-phenylene-co-2,5-pyrazine): an AM1 investigation 144 (1990) 103

Elisei, F., G. Favaro and A. Romani, A laser flash photolysis study of di-pyridyl ketones 144 (1990) 107
Engeln, R., J. Reuss, D. Consalvo, J.W.I. van Bladel, A. van der Avoird and V. Pavlov-Verevkin, Torsional motion of the $CH_3$ groups of propane studied by Raman overtone spectroscopy 144 (1990) 81

Favaro, G., see F. Elisei 144 (1990) 107
Frey, R.F., see S.A.C. Clark 144 (1990) 436
Fuss, W., see L. Zhang 144 (1990) 289

Galvão, D.S., see D.A. dos Santos 144 (1990) 103
Gruber, J.B., M.E. Hills, M.D. Seltzer, G.A. Turner, C.A. Morrison and M.R. Kokta, Spectroscopic analysis of $Er^{3+}(4f^{11})$ in $Y_3Sc_2Al_3O_{12}$ 144 (1990) 327
Guàrdia, E. and J.A. Padró, Molecular dynamics simulation of ferrous and ferric ions in water 144 (1990) 353

Hemmerling, B., see R. Bombach 144 (1990) 265
Hills, M.E., see J.B. Gruber 144 (1990) 327
Hirayama, S., Y. Iuchi, F. Tanaka and K. Shobatake, Natural radiative lifetimes of anthracene derivatives and their dependence on refractive index 144 (1990) 401
Holland, D.M.P. and M.A. MacDonald, A photoelectron study of the inner valence molecular orbitals of OCS 144 (1990) 279
Hubschmid, W., see R. Bombach 144 (1990) 265
Huppert, D., see A. Masad 144 (1990) 391
Hush, N.S., see G.B. Bacskay 144 (1990) 53

Ibuki, T., see G. Cooper 144 (1990) 436
Iuchi, Y., see S. Hirayama 144 (1990) 401

Jensen, H.J.Aa., see V. Špirko 144 (1990) 343
Jørgensen, P., see V. Špirko 144 (1990) 343

Kerdraon, D.I., see G.B. Bacskay 144 (1990) 53
Klein, G., see B. Sipp 144 (1990) 299
Kokta, M.R., see J.B. Gruber 144 (1990) 327
Kompa, K.L., see L. Zhang 144 (1990) 289
Köppel, H., see R. Meiswinkel 144 (1990) 117
Kosower, E.M., see A. Masad 144 (1990) 391

Kuo, C., see K. Chen 144 (1990) 383

Laks, B., see D.A. dos Santos 144 (1990) 103
Lavoine, J.P., see B. Sipp 144 (1990) 299
Leroy, J.P., see R. Wallace 144 (1990) 371
Levy, P. and H. Bonadeo, Static and dynamical calculations on crystalline TTF–CA 144 (1990) 377
Liem, N.Q., G. Marconi and P.R. Salvi, Two-photon vibronic transitions in crystalline chrysene 144 (1990) 425
Lindrum, M. and B. Nickel, Transient spectral hole-burning in the $S_0 \rightarrow S_1$ absorption band of anthracene in a polymethylmethacrylate matrix 144 (1990) 129
Lo, G., see N. Sadeghi 144 (1990) 249
Loesch, H.J., see M. Velegrakis 144 (1990) 304

MacDonald, M.A., see D.M.P. Holland 144 (1990) 279
Marconi, G., see N.Q. Liem 144 (1990) 425
Masad, A., D. Huppert and E.M. Kosower, The transition from non-adiabatic to solvent controlled adiabatic electron transfer kinetics. An experimental study 144 (1990) 391
Meiswinkel, R. and H. Köppel, A pseudo-Jahn–Teller treatment of the pseudorotational spectrum of $Na_3$ 144 (1990) 117
Moerner, W.E., see W.P. Ambrose 144 (1990) 71
Molin, Yu.N., see S.N. Smirnov 144 (1990) 241
Morrison, C.A., see J.B. Gruber 144 (1990) 327

Nahme, H., see J. Bahrdt 144 (1990) 273
Naumann, W., Interplay between pair and bulk recombination. A stochastic approach to Waite's equation 144 (1990) 147
Nickel, B., see M. Lindrum 144 (1990) 129
Nicolaides, C.A., see P. Valtazanos 144 (1990) 363

Padró, J.A., see E. Guàrdia 144 (1990) 353
Paraskevopoulos, G., see D.L. Singleton 144 (1990) 415
Pavlov-Verevkin, V., see R. Engeln 144 (1990) 81
Pebay-Peyroula, J.C., see N. Sadeghi 144 (1990) 249
Pei, C., see K. Chen 144 (1990) 383
Penicaud, A., see B. Sipp 144 (1990) 299
Petrella, G., Atom scattering from ordered structures of adsorbates on surface 144 (1990) 179
Pogrebnya, S.K., see I.K. Dmitrieva 144 (1990) 304
Porshnev, P.I., see I.K. Dmitrieva 144 (1990) 304
Pritchard, H.O., Partial state-to-state calculation of the rate of thermal dissociation of ethane 144 (1990) 47
Pusep, A.Yu., see S.N. Smirnov 144 (1990) 241

Reddish, T.J., see S.A.C. Clark 144 (1990) 436
Reuss, J., see R. Engeln 144 (1990) 81
Romani, A., see F. Elisei 144 (1990) 107

Sadeghi, N., J.C. Pebay-Peyroula, D.W. Setser and G. Lo, Excitation of HgI(B), CdI(B), ZnI(B), PbI(B), CdBr(B), and ZnBr(B) by excitation-transfer reactions of $N_2(A)$ with the dihalide compounds 144 (1990) 249

Salvi, P.R., see N.Q. Liem 144 (1990) 425
Schwentner, N., see J. Bahrdt 144 (1990) 273
Seltzer, M.D., see J.B. Gruber 144 (1990) 327
Setser, D.W., see N. Sadeghi 144 (1990) 249
Shapiro, M., see P. Brumer 144 (1990) 146
Shobatake, K., see S. Hirayama 144 (1990) 401
Shushin, A.I., Magnetic field effects in radical pair recombination. I. CIDNP and CIDEP in geminate recombination 144 (1990) 201
Shushin, A.I., Magnetic field effects in radical pair recombination. II. Spin exchange relaxation and CIDN(E)P in bulk recombination 144 (1990) 223
Singleton, D.L., G. Paraskevopoulos and R.S. Taylor, Comparison of theoretical models of laser ablation of polyimide with experimental results 144 (1990) 415
Sipp, B., G. Klein, J.P. Lavoine, A. Penicaud and P. Batail, Observation of large third-order optical susceptibility in $(BEDT\text{-}TTF)_4Re_6Se_5Cl_9$ 144 (1990) 299
Smirnov, S.N., A.Yu. Pusep, O.A. Anisimov and Yu.N. Molin, Determination of the frequency of excess electron trap to trap migration in saturated hydrocarbons by an OD ESR technique 144 (1990) 241
Špirko, V., H.J.Aa. Jensen and P. Jørgensen, Dipole polarizability surfaces of ammonia 144 (1990) 343
Su, T.-M., Vibrational wave packet generation and time evolution in diatomic ions 144 (1990) 93

Tanaka, F., see S. Hirayama 144 (1990) 401
Taylor, R.S., see D.L. Singleton 144 (1990) 415
Turner, G.A., see J.B. Gruber 144 (1990) 327

Valtazanos, P., N.C. Bacalis and C.A. Nicolaides, Hydrogen molecule and tetrahydrogen cluster embedded in ionic crystals 144 (1990) 363
Van Bladel, J.W.I., see R. Engeln 144 (1990) 81
Van der Avoird, A., see R. Engeln 144 (1990) 81
Velegrakis, M. and H.J. Loesch, An improved potential for Xe+HCl from rainbow scattering. Chem. Phys. 142 (1990) 133. Erratum 144 (1990) 304
Vetter, R., see W. Winkler 144 (1990) 7
Vetter, R., see W. Winkler 144 (1990) 29

Wallace, R. and J.P. Leroy, Search for curvilinear coordinates to separate the "torsional" motion in ethylene from other internal modes 144 (1990) 371
Wang, G.-P., see K. Chen 144 (1990) 383
Winkler, W. and R. Vetter, Electronic reorganization mechanisms in strongly covalent bonds. I. A Mössbauer isomer shift investigation 144 (1990) 7
Winkler, W. and R. Vetter, Electronic reorganization mechanisms in strongly covalent bonds. II. Verified by nuclear quadrupole interactions and NMR spin–spin couplings 144 (1990) 29

Xiang, T.-X., Intermolecular state couplings in the presence of a radiation field. I. Nonresonant V–V transitions 144 (1990) 189

Zhang, L., W. Fuss and K.L. Kompa, Bond-selective photodissociation of CX(X=Br, I) in $XC_2H_4C_2F_4X$ 144 (1990) 289
Zusman, L.D., Dynamical solvent effects in liquid phase chemical reactions. Reactions in solvents with several polarization relaxation times 144 (1990) 1

# LIST OF SUBJECTS

## 1 METHODS

### 1.1 Theoretical

1.1.1 Group theory and algebras
1.1.2 Classical mechanics
1.1.3 Quantized field theory
1.1.4 Many body and quasiparticle approaches
1.1.5 Coupling schemes and perturbative treatments *
1.1.6 Relativistic quantum mechanics
1.1.7 Transport quantum mechanics
1.1.8 Equilibrium statistical mechanics *
1.1.9 Statistical mechanics of stationary states
1.1.10 Non-equilibrium thermodynamic and hydrodynamic theories *
1.1.11 Ab initio schemes for stationary properties *
1.1.12 Computational and simulation methods *
1.1.13 Molecular dynamics and scattering theory *

### 1.2 Experimental

1.2.1 Magnetic resonances *
1.2.2 Cyclotron resonance
1.2.3 Microwave spectroscopy
1.2.4 Infrared spectroscopy *
1.2.5 Raman spectroscopy *
1.2.6 Visible and UV spectroscopy *
1.2.7 Fluorescence spectroscopy *
1.2.8 Photoelectron and Auger spectroscopy *
1.2.9 X-ray spectroscopy
1.2.10 Electron impact spectroscopy *
1.2.11 Laser methods *
1.2.12 Picosecond spectroscopy *
1.2.13 Non-linear optical spectroscopy *
1.2.14 Synchrotron spectroscopies *
1.2.15 Coherent optical spectroscopy *
1.2.16 Optical pumping
1.2.17 Multiple resonance spectroscopy
1.2.18 Optoacoustic spectroscopy
1.2.19 Atomic and molecular beam techniques *
1.2.20 Time-resolved experiments *
1.2.21 Mass spectrometry
1.2.22 Radiolysis *
1.2.23 Mössbauer spectroscopy *
1.2.24 X-ray, electron and neutron diffraction *
1.2.25 Neutron scattering
1.2.26 Light scattering
1.2.27 Field emission and field ionization
1.2.28 Measurement of macroscopic variables

## 2 OBJECTS

### 2.1 Bulk systems

2.1.1 Gases *
2.1.2 Supersonic beams *
2.1.3 Liquids neat
2.1.4 Liquid mixtures and solutions *
2.1.5 Crystals *
2.1.5.1 neat
2.1.5.2 mixed *
2.1.6 Glasses *
2.1.7 Liquid crystals
2.1.8 Polymers *
2.1.9 Semiconductors *
2.1.10 Metals and alloys
2.1.11 Thin films
2.1.12 Surfaces *
2.1.13 Low-dimensional materials *
2.1.14 Dielectrics
2.1.15 Plasmas
2.1.16 Biological systems

### 2.2 Microscopic systems

2.2.1 Atoms *
2.2.2 Molecules (neutral and ionic) *
2.2.2.1 diatomic *
2.2.2.2 small polyatomics *
2.2.2.3 aromatics *
2.2.2.4 other large *
2.2.2.5 polymeric and biological *
2.2.3 Molecular aggregates *
2.2.3.1 dimers
2.2.3.2 van der Waals molecules *
2.2.3.3 clusters *
2.2.3.4 complexes *
2.2.4 Free radicals (including hydronium and muonium) *
2.2.5 Quasiparticles (including excitons)
2.2.6 Defects and impurities *
2.2.7 Ions and charge carriers *

* Denotes subjects covered in this volume

## 3 PHENOMENA

3.1 Molecular structure *
3.2 Vibrations and rotations of molecules *
3.3 Electronic structure and states *
3.4 Electric and magnetic properties *
3.5 Spin splittings
3.6 Optical activity
3.7 Molecular interactions *
3.8 Spectral bandshapes and intensities *
3.9 Coupling of electronic and nuclear motion *
3.10 Energy transfer processes *
3.11 Molecular photophysical processes *
3.12 Intramolecular dynamics *
3.12.1 radiationless transitions *
3.12.2 vibrational energy redistribution (including vibrational dissociation) *
3.13 Luminescence spectra, yields and lifetimes *
3.14 Coherence loss processes
3.15 Non-linear responses (including optical) *
3.16 Multiphoton phenomena *
3.17 Reactions (including dissociation) *
3.17.1 gas phase *
3.17.2 condensed phase *
3.17.3 photochemical *
3.18 Tunnelling
3.19 Electron transfer *
3.20 Positron annihilation
3.21 Ionization (including Rydberg states)
3.22 Molecular motion (including diffusive) *
3.23 Isotopic effects
3.24 Fluctuations and noise *
3.25 Collective motion and excitations
3.26 Surface effects and catalysis *
3.27 Thermodynamic and transport properties
3.28 Structure of solids and liquids *
3.29 Critical phenomena
3.30 Phase transitions *

# SUBJECT INDEX TO VOLUME 144

## METHODS

### Theoretical

*Coupling schemes and perturbative treatments*

IR $\nu_s$(XH) absorption band shape in H-bonded complex. I. Theory, H. Abramczyk 144 (1990) 305
IR $\nu_s$(XH) absorption band shape of H-bonded complex in condensed media. II. Numerical calculations of the profiles, H. Abramczyk 144 (1990) 319
Spectroscopic analysis of $Er^{3+}$ ($4f^{11}$) in $Y_3Sc_2Al_3O_{12}$, J.B. Gruber, M.E. Hills, M.D. Seltzer, G.A. Turner, C.A. Morrison and M.R. Kokta 144 (1990) 327

*Equilibrium statistical mechanics*

IR $\nu_s$(XH) absorption band shape in H-bonded complex. I. Theory, H. Abramczyk 144 (1990) 305

*Non-equilibrium thermodynamic and hydrodynamic theories*

Dynamical solvent effects in liquid phase chemical reactions. Reactions in solvents with several polarization relaxation times, L.D. Zusman 144 (1990) 1
Interplay between pair and bulk recombination. A stochastic approach to Waite's equation, W. Naumann 144 (1990) 147
Application of generalized transition state theory for calculation of the rate constant of a chemical reaction with charge transfer in a polar solvent, M.V. Basilevsky and G.E. Chudinov 144 (1990) 155

*Ab initio schemes for stationary properties*

Electronic reorganization mechanisms in strongly covalent bonds. I. A Mössbauer isomer shift investigation, W. Winkler and R. Vetter 144 (1990) 7
Electronic reorganization mechanisms in strongly covalent bonds. II. Verified by nuclear quadrupole interactions and NMR spin–spin couplings, W. Winkler and R. Vetter 144 (1990) 29
Quantum chemical study of the HCl molecule and its binary complexes with CO, $C_2H_2$, $C_2H_4$, $PH_3$, $H_2S$, HCN, $H_2O$ and $NH_3$: hydrogen bonding and its effect on the $^{35}Cl$ nuclear quadrupole coupling constant, G.B. Bacskay, D.I. Kerdraon and N.S. Hush 144 (1990) 53
Dipole polarizability surfaces of ammonia, V. Špirko, H.J.Aa. Jensen and P. Jørgensen 144 (1990) 343
Hydrogen molecule and tetrahydrogen cluster embedded in ionic crystals, P. Valtazanos, N.C. Bacalis and C.A. Nicolaides 144 (1990) 363

*Computational and simulation methods*

Vibrational wave packet generation and time evolution in diatomic ions, T.-M. Su 144 (1990) 93
Poly(*p*-phenylene-co-2,5-pyrazine): an AM1 investigation, D.A. dos Santos, D.S. Galvão, B. Laks, M.W.G. Dezotti and M.A. de Paoli 144 (1990) 103
A new method for incorporating momentum resolution effects and defining the momentum scale in electron momentum spectroscopy, A.O. Bawagan and C.E. Brion 144 (1990) 167

Molecular dynamics simulation of ferrous and ferric ions in water, E. Guàrdia and J.A. Padró 144 (1990) 353
Hydrogen molecule and tetrahydrogen cluster embedded in ionic crystals, P. Valtazanos, N.C. Bacalis and C.A. Nicolaides 144 (1990) 363

*Molecular dynamics and scattering theory*
Partial state-to-state calculation of the rate of thermal dissociation of ethane, H.O. Pritchard 144 (1990) 47
Vibrational wave packet generation and time evolution in diatomic ions, T.-M. Su 144 (1990) 93
A pseudo-Jahn–Teller treatment of the pseudorotational spectrum of $Na_3$, R. Meiswinkel and H. Köppel 144 (1990) 117
Application of generalized transition state theory for calculation of the rate constant of a chemical reaction with charge transfer in a polar solvent, M.V. Basilevsky and G.E. Chudinov 144 (1990) 155
Atom scattering from ordered structures of adsorbates on surface, G. Petrella 144 (1990) 179
Intermolecular state couplings in the presence of a radiation field. I. Non-resonant V–V transitions, T.-X. Xiang 144 (1990) 189
Magnetic field effects in radical pair recombination. II. Spin exchange relaxation and CIDN(E)P in bulk recombination, A.I. Shushin 144 (1990) 223
Search for curvilinear coordinates to separate the "torsional" motion in ethylene from other internal modes, R. Wallace and J.P. Leroy 144 (1990) 371

**Experimental**

*Magnetic resonances*
Electronic reorganization mechanisms in strongly covalent bonds. I. A Mössbauer isomer shift investigation, W. Winkler and R. Vetter 144 (1990) 7
Electronic reorganization mechanisms in strongly covalent bonds. II. Verified by nuclear quadrupole interactions and NMR spin–spin couplings, W. Winkler and R. Vetter 144 (1990) 29
Magnetic field effects in radical pair recombination. II. Spin exchange relaxation and CIDN(E)P in bulk recombination, A.I. Shushin 144 (1990) 223
Determination of the frequency of excess electron trap to trap migration in saturated hydrocarbons by an OD ESR technique, S.N. Smirnov, A.Yu. Pusep, O.A. Anisimov and Yu.N. Molin 144 (1990) 241

*Infrared spectroscopy*
IR $\nu_s$(XH) absorption band shape in H-bonded complex. I. Theory, H. Abramczyk 144 (1990) 305
IR $\nu_s$(XH) absorption band shape of H-bonded complex in condensed media. II. Numerical calculations of the profiles, H. Abramczyk 144 (1990) 319
Spectroscopic analysis of $Er^{3+}(4f^{11})$ in $Y_3Sc_2Al_3O_{12}$, J.B. Gruber, M.E. Hills, M.D. Seltzer, G.A. Turner, C.A. Morrison and M.R. Kokta 144 (1990) 327

*Raman spectroscopy*
Torsional motion of the $CH_3$ groups of propane studied by Raman overtone spectroscopy, R. Engeln, J. Reuss, D. Consalvo, J.W.I. van Bladel, A. van der Avoird and V. Pavlov-Verevkin 144 (1990) 81

*Visible and UV spectroscopy*

Temperature dependence of photon-gated persistent spectral hole-burning for the meso-tetra-*p*-tolyl-Zn-tetrabenzoporphyrin/chloroform system in poly(methylmethacrylate), W.P. Ambrose and W.E. Moerner 144 (1990) 71

Transient spectral hole-burning in the $S_0 \rightarrow S_1$ absorption band of anthracene in a polymethylmethacrylate matrix, M. Lindrum and B. Nickel 144 (1990) 129

Excitation of HgI(B), CdI(B), ZnI(B), PbI(B), CdBr(B), and ZnBr(B) by excitation-transfer reactions of $N_2(A)$ with the dihalide compounds, N. Sadeghi, J.C. Pebay-Peyroula, D.W. Setser and G. Lo 144 (1990) 249

Saturation effects and Stark shift in hydrogen Q-branch CARS spectra, R. Bombach, B. Hemmerling and W. Hubschmid 144 (1990) 265

Spectroscopic analysis of $Er^{3+}(4f^{11})$ in $Y_3Sc_2Al_3O_{12}$, J.B. Gruber, M.E. Hills, M.D. Seltzer, G.A. Turner, C.A. Morrison and M.R. Kokta 144 (1990) 327

*Fluorescence spectroscopy*

Excitation of HgI(B), CdI(B), ZnI(B), PbI(B), CdBr(B), and ZnBr(B) by excitation-transfer reactions of $N_2(A)$ with the dihalide compounds, N. Sadeghi, J.C. Pebay-Peyroula, D.W. Setser and G. Lo 144 (1990) 249

A metastable state of CO in Ar matrix at about 11 eV, J. Bahrdt, H. Nahme and N. Schwentner 144 (1990) 273

Spectroscopic analysis of $Er^{3+}(4f^{11})$ in $Y_3Sc_2Al_3O_{12}$, J.B. Gruber, M.E. Hills, M.D. Seltzer, G.A. Turner, C.A. Morrison and M.R. Kokta 144 (1990) 327

Vibrational analyses of the $^2B_2$–$^2A_1$ fluorescence spectra of $NO_2$ under dye laser excitations, K. Chen, G.-P. Wang, C. Kuo and C. Pei 144 (1990) 383

The transition from non-adiabatic to solvent controlled adiabatic electron transfer kinetics. An experimental study, A. Masad, D. Huppert and E.M. Kosower 144 (1990) 391

*Photoelectron and Auger spectroscopy*

A photoelectron study of the inner valence molecular orbitals of OCS, D.M.P. Holland and M.A. MacDonald 144 (1990) 279

*Electron impact spectroscopy*

A new method for incorporating momentum resolution effects and defining the momentum scale in electron momentum spectroscopy, A.O. Bawagan and C.E. Brion 144 (1990) 167

Low-energy electron collisions with dichloromethane and butadiene: selectivity of resonant vibrational excitation, R. Abouaf and C. Benoit 144 (1990) 407

*Laser methods*

A laser flash photolysis study of di-pyridyl ketones, F. Elisei, G. Favaro and A. Romani 144 (1990) 107

Transient spectral hole-burning in the $S_0 \rightarrow S_1$ absorption band of anthracene in a polymethylmethacrylate matrix, M. Lindrum and B. Nickel 144 (1990) 129

Bond-selective photodissociation of CX(X=Br, I) in $XC_2H_4C_2F_4X$, L. Zhang, W. Fuss and K.L. Kompa 144 (1990) 289

Comparison of theoretical models of laser ablation of polyimide with experimental results, D.L. Singleton, G. Paraskevopoulos and R.S. Taylor 144 (1990) 415

*Picosecond spectroscopy*

The transition from non-adiabatic to solvent controlled adiabatic electron transfer kinetics. An experimental study, A. Masad, D. Huppert and E.M. Kosower 144 (1990) 391

*Non-linear optical spectroscopy*
Observation of large third-order optical susceptibility in (BEDT-TTF)$_4$Re$_6$Se$_5$Cl$_9$, B. Sipp, G. Klein, J.P. Lavoine, A. Penicaud and P. Batail 144 (1990) 299
Two-photon vibronic transitions in crystalline chrysene, N.Q. Liem, G. Marconi and P.R. Salvi 144 (1990) 425

*Synchrotron spectroscopies*
A metastable state of CO in Ar matrix at about 11 eV, J. Bahrdt, H. Nahme and N. Schwentner 144 (1990) 273
A photoelectron study of the inner valence molecular orbitals of OCS, D.M.P. Holland and M.A. MacDonald 144 (1990) 279

*Coherent optical spectroscopy*
Saturation effects and Stark shift in hydrogen Q-branch CARS spectra, R. Bombach, B. Hemmerling and W. Hubschmid 144 (1990) 265

*Atomic and molecular beam techniques*
Natural radiative lifetimes of anthracene derivatives and their dependence on refractive index, S. Hirayama, Y. Iuchi, F. Tanaka and K. Shobatake 144 (1990) 401

*Time-resolved experiments*
The transition from non-adiabatic to solvent controlled adiabatic electron transfer kinetics. An experimental study, A. Masad, D. Huppert and E.M. Kosower 144 (1990) 391
Natural radiative lifetimes of anthracene derivatives and their dependence on refractive index, S. Hirayama, Y. Iuchi, F. Tanaka and K. Shobatake 144 (1990) 401

*Radiolysis*
Determination of the frequency of excess electron trap to trap migration in saturated hydrocarbons by an OD ESR technique, S.N. Smirnov, A.Yu. Pusep, O.A. Anisimov and Yu.N. Molin 144 (1990) 241

*Mössbauer spectroscopy*
Electronic reorganization mechanisms in strongly covalent bonds. I. A Mössbauer isomer shift investigation, W. Winkler and R. Vetter 144 (1990) 7
Electronic reorganization mechanisms in strongly covalent bonds. II. Verified by nuclear quadrupole interactions and NMR spin–spin couplings, W. Winkler and R. Vetter 144 (1990) 29

*X-ray, electron and neutron diffraction*
Magnetic field effects in radical pair recombination. II. Spin exchange relaxation and CIDN(E)P in bulk recombination, A.I. Shushin 144 (1990) 223

## OBJECTS

### Bulk systems

*Gases*

Torsional motion of the $CH_3$ groups of propane studied by Raman overtone spectroscopy, R. Engeln, J. Reuss, D. Consalvo, J.W.I. van Bladel, A. van der Avoird and V. Pavlov-Verevkin 144 (1990) 81
Saturation effects and Stark shift in hydrogen Q-branch CARS spectra, R. Bombach, B. Hemmerling and W. Hubschmid 144 (1990) 265
IR $\nu_s$(XH) absorption band shape of H-bonded complex in condensed media. II. Numerical calculations of the profiles, H. Abramczyk 144 (1990) 319
Vibrational analyses of the $^2B_2$–$^2A_1$ fluorescence spectra of $NO_2$ under dye laser excitations, K. Chen, G.-P. Wang, C. Kuo and C. Pei 144 (1990) 383

*Supersonic beams*

Natural radiative lifetimes of anthracene derivatives and their dependence on refractive index, S. Hirayama, Y. Iuchi, F. Tanaka and K. Shobatake 144 (1990) 401

*Liquid mixtures and solutions*

Dynamical solvent effects in liquid phase chemical reactions. Reactions in solvents with several polarization relaxation times, L.D. Zusman 144 (1990) 1
Interplay between pair and bulk recombination. A stochastic approach to Waite's equation, W. Naumann 144 (1990) 147
Magnetic field effects in radical pair recombination. I. CIDNP and CIDEP in geminate recombination, A.I. Shushin 144 (1990) 201
Determination of the frequency of excess electron trap to trap migration in saturated hydrocarbons by an OD ESR technique, S.N. Smirnov, A.Yu. Pusep, O.A. Anisimov and Yu.N. Molin 144 (1990) 241
IR $\nu_s$(XH) absorption band shape in H-bonded complex. I. Theory, H. Abramczyk 144 (1990) 305
The transition from non-adiabatic to solvent controlled adiabatic electron transfer kinetics. An experimental study, A. Masad, D. Huppert and E.M. Kosower 144 (1990) 391
Natural radiative lifetimes of anthracene derivatives and their dependence on refractive index, S. Hirayama, Y. Iuchi, F. Tanaka and K. Shobatake 144 (1990) 401

*Crystals*

IR $\nu_s$(XH) absorption band shape of H-bonded complex in condensed media. II. Numerical calculations of the profiles, H. Abramczyk 144 (1990) 319
Static and dynamical calculations on crystalline TTF–CA, P. Levy and H. Bonadeo 144 (1990) 377

*–mixed*

A metastable state of CO in Ar matrix at about 11 eV, J. Bahrdt, H. Nahme and N. Schwentner 144 (1990) 273

*Glasses*

Determination of the frequency of excess electron trap to trap migration in saturated hydrocarbons by an OD ESR technique, S.N. Smirnov, A.Yu. Pusep, O.A. Anisimov and Yu.N. Molin 144 (1990) 241

*Polymers*

Temperature dependence of photon-gated persistent spectral hole-burning for the meso-tetra-*p*-tolyl-Zn-tetrabenzoporphyrin/chloroform system in poly(methylmethacrylate), W.P. Ambrose and W.E. Moerner 144 (1990) 71

Transient spectral hole-burning in the $S_0 \rightarrow S_1$ absorption band of anthracene in a polymethylmethacrylate matrix, M. Lindrum and B. Nickel 144 (1990) 129

Comparison of theoretical models of laser ablation of polyimide with experimental results, D.L. Singleton, G. Paraskevopoulos and R.S. Taylor 144 (1990) 415

*Semiconductors*

The transition from non-adiabatic to solvent controlled adiabatic electron transfer kinetics. An experimental study, A. Masad, D. Huppert and E.M. Kosower 144 (1990) 391

*Surfaces*

Atom scattering from ordered structures of adsorbates on surface, G. Petrella 144 (1990) 179

*Low-dimensional materials*

Observation of large third-order optical susceptibility in $(BEDT\text{-}TTF)_4Re_6Se_5Cl_9$, B. Sipp, G. Klein, J.P. Lavoine, A. Penicaud and P. Batail 144 (1990) 299

**Microscopic systems**

*Atoms*

A new method for incorporating momentum resolution effects and defining the momentum scale in electron momentum spectroscopy, A.O. Bawagan and C.E. Brion 144 (1990) 167

Excitation of HgI(B), CdI(B), ZnI(B), PbI(B), CdBr(B), and ZnBr(B) by excitation-transfer reactions of $N_2(A)$ with the dihalide compounds, N. Sadeghi, J.C. Pebay-Peyroula, D.W. Setser and G. Lo 144 (1990) 249

*Molecules (neutral and ionic)*

Dynamical solvent effects in liquid phase chemical reactions. Reactions in solvents with several polarization relaxation times, L.D. Zusman 144 (1990) 1

Quantum chemical study of the HCl molecule and its binary complexes with CO, $C_2H_2$, $C_2H_4$, $PH_3$, $H_2S$, HCN, $H_2O$ and $NH_3$: hydrogen bonding and its effect on the $^{35}Cl$ nuclear quadrupole coupling constant, G.B. Bacskay, D.I. Kerdraon and N.S. Hush 144 (1990) 53

Torsional motion of the $CH_3$ groups of propane studied by Raman overtone spectroscopy, R. Engeln, J. Reuss, D. Consalvo, J.W.I. van Bladel, A. van der Avoird and V. Pavlov-Verevkin 144 (1990) 81

Poly(*p*-phenylene-co-2,5-pyrazine): an AM1 investigation, D.A. dos Santos, D.S. Galvão, B. Laks, M.W.G. Dezotti and M.A. de Paoli 144 (1990) 103

Intermolecular state couplings in the presence of a radiation field. I. Non-resonant V–V transitions, T.-X. Xiang 144 (1990) 189

Hydrogen molecule and tetrahydrogen cluster embedded in ionic crystals, P. Valtazanos, N.C. Bacalis and C.A. Nicolaides 144 (1990) 363

*–diatomic*

Vibrational wave packet generation and time evolution in diatomic ions, T.-M. Su 144 (1990) 93

Saturation effects and Stark shift in hydrogen Q-branch CARS spectra, R. Bombach, B. Hemmerling and W. Hubschmid 144 (1990) 265
A metastable state of CO in Ar matrix at about 11 eV, J. Bahrdt, H. Nahme and N. Schwentner 144 (1990) 273

*–small polyatomics*
Partial state-to-state calculation of the rate of thermal dissociation of ethane, H.O. Pritchard 144 (1990) 47
Temperature dependence of photon-gated persistent spectral hole-burning for the meso-tetra-*p*-tolyl-Zn-tetrabenzoporphyrin/chloroform system in poly(methylmethacrylate), W.P. Ambrose and W.E. Moerner 144 (1990) 71
Torsional motion of the $CH_3$ groups of propane studied by Raman overtone spectroscopy, R. Engeln, J. Reuss, D. Consalvo, J.W.I. van Bladel, A. van der Avoird and V. Pavlov-Verevkin 144 (1990) 81
A new method for incorporating momentum resolution effects and defining the momentum scale in electron momentum spectroscopy, A.O. Bawagan and C.E. Brion 144 (1990) 167
A photoelectron study of the inner valence molecular orbitals of OCS, D.M.P. Holland and M.A. MacDonald 144 (1990) 279
Molecular dynamics simulation of ferrous and ferric ions in water, E. Guàrdia and J.A. Padró 144 (1990) 353
Search for curvilinear coordinates to separate the "torsional" motion in ethylene from other internal modes, R. Wallace and J.P. Leroy 144 (1990) 371
Vibrational analyses of the $^2B_2$–$^2A_1$ fluorescence spectra of $NO_2$ under dye laser excitations, K. Chen, G.-P. Wang, C. Kuo and C. Pei 144 (1990) 383
Low-energy electron collisions with dichloromethane and butadiene: selectivity of resonant vibrational excitation, R. Abouaf and C. Benoit 144 (1990) 407

*–aromatics*
Poly(*p*-phenylene-co-2,5-pyrazine): an AM1 investigation, D.A. dos Santos, D.S. Galvão, B. Laks, M.W.G. Dezotti and M.A. de Paoli 144 (1990) 103
A laser flash photolysis study of di-pyridyl ketones, F. Elisei, G. Favaro and A. Romani 144 (1990) 107
Transient spectral hole-burning in the $S_0 \rightarrow S_1$ absorption band of anthracene in a polymethylmethacrylate matrix, M. Lindrum and B. Nickel 144 (1990) 129
Natural radiative lifetimes of anthracene derivatives and their dependence on refractive index, S. Hirayama, Y. Iuchi, F. Tanaka and K. Shobatake 144 (1990) 401
Two-photon vibronic transitions in crystalline chrysene, N.Q. Liem, G. Marconi and P.R. Salvi 144 (1990) 425

*–other large*
Bond-selective photodissociation of CX(X=Br, I) in $XC_2H_4C_2F_4X$, L. Zhang, W. Fuss and K.L. Kompa 144 (1990) 289

*–polymeric and biological*
Poly(*p*-phenylene-co-2,5-pyrazine): an AM1 investigation, D.A. dos Santos, D.S. Galvão, B. Laks, M.W.G. Dezotti and M.A. de Paoli 144 (1990) 103

*Molecular aggregates*
Electronic reorganization mechanisms in strongly covalent bonds. I. A Mössbauer isomer shift investigation, W. Winkler and R. Vetter 144 (1990) 7

Electronic reorganization mechanisms in strongly covalent bonds. II. Verified by nuclear quadrupole interactions and NMR spin–spin couplings, W. Winkler and R. Vetter 144 (1990) 29

*–van der Waals molecules*
Quantum chemical study of the HCl molecule and its binary complexes with CO, $C_2H_2$, $C_2H_4$, $PH_3$, $H_2S$, HCN, $H_2O$ and $NH_3$: hydrogen bonding and its effect on the $^{35}Cl$ nuclear quadrupole coupling constant, G.B. Bacskay, D.I. Kerdraon and N.S. Hush 144 (1990) 53

*–clusters*
A pseudo-Jahn–Teller treatment of the pseudorotational spectrum of $Na_3$, R. Meiswinkel and H. Köppel 144 (1990) 117
Hydrogen molecule and tetrahydrogen cluster embedded in ionic crystals, P. Valtazanos, N.C. Bacalis and C.A. Nicolaides 144 (1990) 363

*–complexes*
Observation of large third-order optical susceptibility in $(BEDT\text{-}TTF)_4Re_6Se_5Cl_9$, B. Sipp, G. Klein, J.P. Lavoine, A. Penicaud and P. Batail 144 (1990) 299
IR $\nu_s(XH)$ absorption band shape of H-bonded complex in condensed media. II. Numerical calculations of the profiles, H. Abramczyk 144 (1990) 319

*Free radicals (including hydronium and muonium)*
A laser flash photolysis study of di-pyridyl ketones, F. Elisei, G. Favaro and A. Romani 144 (1990) 107
Magnetic field effects in radical pair recombination. I. CIDNP and CIDEP in geminate recombination, A.I. Shushin 144 (1990) 201

*Defects and impurities*
Atom scattering from ordered structures of adsorbates on surface, G. Petrella 144 (1990) 179

*Ions and charge carriers*
Determination of the frequency of excess electron trap to trap migration in saturated hydrocarbons by an OD ESR technique, S.N. Smirnov, A.Yu. Pusep, O.A. Anisimov and Yu.N. Molin 144 (1990) 241
Molecular dynamics simulation of ferrous and ferric ions in water, E. Guàrdia and J.A. Padró 144 (1990) 353

**PHENOMENA**

*Molecular structure*
Electronic reorganization mechanisms in strongly covalent bonds. I. A Mössbauer isomer shift investigation, W. Winkler and R. Vetter 144 (1990) 7
Electronic reorganization mechanisms in strongly covalent bonds. II. Verified by nuclear quadrupole interactions and NMR spin–spin couplings, W. Winkler and R. Vetter 144 (1990) 29
Quantum chemical study of the HCl molecule and its binary complexes with CO, $C_2H_2$, $C_2H_4$, $PH_3$, $H_2S$, HCN, $H_2O$ and $NH_3$: hydrogen bonding and its effect on the $^{35}Cl$ nuclear quadrupole coupling constant, G.B. Bacskay, D.I. Kerdraon and N.S. Hush 144 (1990) 53
Poly(*p*-phenylene-co-2,5-pyrazine): an AM1 investigation, D.A. dos Santos, D.S. Galvão, B. Laks, M.W.G. Dezotti and M.A. de Paoli 144 (1990) 103
Dipole polarizability surfaces of ammonia, V. Špirko, H.J.Aa. Jensen and P. Jørgensen 144 (1990) 343

*Vibrations and rotations of molecules*

Partial state-to-state calculation of the rate of thermal dissociation of ethane, H.O. Pritchard 144 (1990) 47
Torsional motion of the $CH_3$ groups of propane studied by Raman overtone spectroscopy, R. Engeln, J. Reuss, D. Consalvo, J.W.I. van Bladel, A. van der Avoird and V. Pavlov-Verevkin 144 (1990) 81
Vibrational wave packet generation and time evolution in diatomic ions, T.-M. Su 144 (1990) 93
A pseudo-Jahn–Teller treatment of the pseudorotational spectrum of $Na_3$, R. Meiswinkel and H. Köppel 144 (1990) 117
Transient spectral hole-burning in the $S_0 \rightarrow S_1$ absorption band of anthracene in a polymethylmethacrylate matrix, M. Lindrum and B. Nickel 144 (1990) 129
Dipole polarizability surfaces of ammonia, V. Špirko, H.J.Aa. Jensen and P. Jørgensen 144 (1990) 343
Molecular dynamics simulation of ferrous and ferric ions in water, E. Guàrdia and J.A. Padró 144 (1990) 353
Search for curvilinear coordinates to separate the "torsional" motion in ethylene from other internal modes, R. Wallace and J.P. Leroy 144 (1990) 371

*Electronic structure and states*

A new method for incorporating momentum resolution effects and defining the momentum scale in electron momentum spectroscopy, A.O. Bawagan and C.E. Brion 144 (1990) 167
Excitation of HgI(B), CdI(B), ZnI(B), PbI(B), CdBr(B), and ZnBr(B) by excitation-transfer reactions of $N_2$(A) with the dihalide compounds, N. Sadeghi, J.C. Pebay-Peyroula, D.W. Setser and G. Lo 144 (1990) 249
A photoelectron study of the inner valence molecular orbitals of OCS, D.M.P. Holland and M.A. MacDonald 144 (1990) 279
Spectroscopic analysis of $Er^{3+}$ ($4f^{11}$) in $Y_3Sc_2Al_3O_{12}$, J.B. Gruber, M.E. Hills, M.D. Seltzer, G.A. Turner, C.A. Morrison and M.R. Kokta 144 (1990) 327
Hydrogen molecule and tetrahydrogen cluster embedded in ionic crystals, P. Valtazanos, N.C. Bacalis and C.A. Nicolaides 144 (1990) 363
Low-energy electron collisions with dichloromethane and butadiene: selectivity of resonant vibrational excitation, R. Abouaf and C. Benoit 144 (1990) 407
Two-photon vibronic transitions in crystalline chrysene, N.Q. Liem, G. Marconi and P.R. Salvi 144 (1990) 425

*Electric and magnetic properties*

Quantum chemical study of the HCl molecule and its binary complexes with CO, $C_2H_2$, $C_2H_4$, $PH_3$, $H_2S$, HCN, $H_2O$ and $NH_3$: hydrogen bonding and its effect on the $^{35}Cl$ nuclear quadrupole coupling constant, G.B. Bacskay, D.I. Kerdraon and N.S. Hush 144 (1990) 53
Dipole polarizability surfaces of ammonia, V. Špirko, H.J.Aa. Jensen and P. Jørgensen 144 (1990) 343

*Molecular interactions*

Intermolecular state couplings in the presence of a radiation field. I. Non-resonant V–V transitions, T.-X. Xiang 144 (1990) 189
IR $\nu_s$(XH) absorption band shape in H-bonded complex. I. Theory, H. Abramczyk 144 (1990) 305

*Spectral bandshapes and intensities*

A pseudo-Jahn–Teller treatment of the pseudorotational spectrum of $Na_3$, R. Meiswinkel and H. Köppel 144 (1990) 117

IR $\nu_s$(XH) absorption band shape of H-bonded complex in condensed media. II. Numerical calculations of the profiles, H. Abramczyk 144 (1990) 319
Vibrational analyses of the $^2B_2$–$^2A_1$ fluorescence spectra of $NO_2$ under dye laser excitations, K. Chen, G.-P. Wang, C. Kuo and C. Pei 144 (1990) 383

*Coupling of electronic and nuclear motion*
A pseudo-Jahn–Teller treatment of the pseudorotational spectrum of $Na_3$, R. Meiswinkel and H. Köppel 144 (1990) 117
Two-photon vibronic transitions in crystalline chrysene, N.Q. Liem, G. Marconi and P.R. Salvi 144 (1990) 425

*Energy transfer processes*
Partial state-to-state calculation of the rate of thermal dissociation of ethane, H.O. Pritchard 144 (1990) 47
Intermolecular state couplings in the presence of a radiation field. I. Non-resonant V–V transitions, T.-X. Xiang 144 (1990) 189
Excitation of HgI(B), CdI(B), ZnI(B), PbI(B), CdBr(B), and ZnBr(B) by excitation-transfer reactions of $N_2$(A) with the dihalide compounds, N. Sadeghi, J.C. Pebay-Peyroula, D.W. Setser and G. Lo 144 (1990) 249

*Molecular photophysical processes*
Temperature dependence of photon-gated persistent spectral hole-burning for the meso-tetra-*p*-tolyl-Zn-tetrabenzoporphyrin/chloroform system in poly(methylmethacrylate), W.P. Ambrose and W.E. Moerner 144 (1990) 71
A laser flash photolysis study of di-pyridyl ketones, F. Elisei, G. Favaro and A. Romani 144 (1990) 107
A photoelectron study of the inner valence molecular orbitals of OCS, D.M.P. Holland and M.A. MacDonald 144 (1990) 279
Natural radiative lifetimes of anthracene derivatives and their dependence on refractive index, S. Hirayama, Y. Iuchi, F. Tanaka and K. Shobatake 144 (1990) 401
Comparison of theoretical models of laser ablation of polyimide with experimental results, D.L. Singleton, G. Paraskevopoulos and R.S. Taylor 144 (1990) 415

*Intramolecular dynamics*
Vibrational wave packet generation and time evolution in diatomic ions, T.-M. Su 144 (1990) 93
Molecular dynamics simulation of ferrous and ferric ions in water, E. Guàrdia and J.A. Padró 144 (1990) 353
Search for curvilinear coordinates to separate the "torsional" motion in ethylene from other internal modes, R. Wallace and J.P. Leroy 144 (1990) 371

*–radiationless transitions*
A metastable state of CO in Ar matrix at about 11 eV, J. Bahrdt, H. Nahme and N. Schwentner 144 (1990) 273
Hydrogen molecule and tetrahydrogen cluster embedded in ionic crystals, P. Valtazanos, N.C. Bacalis and C.A. Nicolaides 144 (1990) 363

*–vibrational energy redistribution (including vibrational dissociation)*
Vibrational wave packet generation and time evolution in diatomic ions, T.-M. Su 144 (1990) 93
Search for curvilinear coordinates to separate the "torsional" motion in ethylene from other internal modes, R. Wallace and J.P. Leroy 144 (1990) 371

Low-energy electron collisions with dichloromethane and butadiene: selectivity of resonant vibrational excitation, R. Abouaf and C. Benoit 144 (1990) 407

*Luminescence spectra, yields and lifetimes*
Natural radiative lifetimes of anthracene derivatives and their dependence on refractive index, S. Hirayama, Y. Iuchi, F. Tanaka and K. Shobatake 144 (1990) 401

*Non-linear responses (including optical)*
Application of generalized transition state theory for calculation of the rate constant of a chemical reaction with charge transfer in a polar solvent, M.V. Basilevsky and G.E. Chudinov 144 (1990) 155
Observation of large third-order optical susceptibility in (BEDT-TTF)$_4$Re$_6$Se$_5$Cl$_9$, B. Sipp, G. Klein, J.P. Lavoine, A. Penicaud and P. Batail 144 (1990) 299

*Multiphoton phenomena*
Temperature dependence of photon-gated persistent spectral hole-burning for the meso-tetra-*p*-tolyl-Zn-tetrabenzoporphyrin/chloroform system in poly(methylmethacrylate), W.P. Ambrose and W.E. Moerner 144 (1990) 71
Comparison of theoretical models of laser ablation of polyimide with experimental results, D.L. Singleton, G. Paraskevopoulos and R.S. Taylor 144 (1990) 415

*Reactions (including dissociation)*
Excitation of HgI(B), CdI(B), ZnI(B), PbI(B), CdBr(B), and ZnBr(B) by excitation-transfer reactions of $N_2$(A) with the dihalide compounds, N. Sadeghi, J.C. Pebay-Peyroula, D.W. Setser and G. Lo 144 (1990) 249

*–gas phase*
Partial state-to-state calculation of the rate of thermal dissociation of ethane, H.O. Pritchard 144 (1990) 47
Bond-selective photodissociation of CX(X=Br, I) in $XC_2H_4C_2F_4X$, L. Zhang, W. Fuss and K.L. Kompa 144 (1990) 289

*–condensed phase*
Dynamical solvent effects in liquid phase chemical reactions. Reactions in solvents with several polarization relaxation times, L.D. Zusman 144 (1990) 1
Interplay between pair and bulk recombination. A stochastic approach to Waite's equation, W. Naumann 144 (1990) 147
Application of generalized transition state theory for calculation of the rate constant of a chemical reaction with charge transfer in a polar solvent, M.V. Basilevsky and G.E. Chudinov 144 (1990) 155
Magnetic field effects in radical pair recombination. I. CIDNP and CIDEP in geminate recombination, A.I. Shushin 144 (1990) 201
Bond-selective photodissociation of CX(X=Br, I) in $XC_2H_4C_2F_4X$, L. Zhang, W. Fuss and K.L. Kompa 144 (1990) 289

*–photochemical*
A laser flash photolysis study of di-pyridyl ketones, F. Elisei, G. Favaro and A. Romani 144 (1990) 107
Magnetic field effects in radical pair recombination. I. CIDNP and CIDEP in geminate recombination, A.I. Shushin 144 (1990) 201

Bond-selective photodissociation of CX(X=Br, I) in $XC_2H_4C_2F_4X$, L. Zhang, W. Fuss and K.L. Kompa 144 (1990) 289

*Electron transfer*

Application of generalized transition state theory for calculation of the rate constant of a chemical reaction with charge transfer in a polar solvent, M.V. Basilevsky and G.E. Chudinov 144 (1990) 155

Determination of the frequency of excess electron trap to trap migration in saturated hydrocarbons by an OD ESR technique, S.N. Smirnov, A.Yu. Pusep, O.A. Anisimov and Yu.N. Molin 144 (1990) 241

*Molecular motion (including diffusive)*

Magnetic field effects in radical pair recombination. I. CIDNP and CIDEP in geminate recombination, A.I. Shushin 144 (1990) 201

*Fluctuations and noise*

Interplay between pair and bulk recombination. A stochastic approach to Waite's equation, W. Naumann 144 (1990) 147

*Surface effects and catalysis*

Atom scattering from ordered structures of adsorbates on surface, G. Petrella 144 (1990) 179

*Structure of solids and liquids*

Static and dynamical calculations on crystalline TTF–CA, P. Levy and H. Bonadeo 144 (1990) 377

*Phase transitions*

Static and dynamical calculations on crystalline TTF–CA, P. Levy and H. Bonadeo 144 (1990) 377